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CENTRAL INTELLIGENCE AGENCY

INFORMATION REPORT

25X1A

COUNTRY USSR

REPORT NO. [redacted]

SUBJECT Angara Iron/Razdolnaya Antimony/Yenisei Gold/ Kazakhstanskaya Steppe Gold Copper Areas

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1. Angara Iron District 1933

a. Krasnoyarsk Deposit (Map #1 1a)

1) Location - 56°13'N/102°05'E. Northeast of the village of Bratskoye is the village of Angara, on the Angara River, which is the capital of the district. About 16 miles upriver from Angara is the village of Krasny Yar. The Krasny Yar iron deposit is located about 10 miles northeast of the village of the same name.

2) a) The ore is magnetite. An area (See Enclosure A, Sketch #4) about 200 x 100 meters is high grade averaging 55% Fe. The balance of the orebody is fine grained lean ore and will average 30 to 40% Fe.

25X1X b) At the time [redacted] work had been confined to exploration. The ore had been partially blocked out to a depth of 250 meters by six or seven drill holes. Rough estimates indicate about 60,000 tons of direct shipping ore per foot of depth that is 48,000,000 tons to about 800 feet depth and slightly more of 35% Fe which might yield 21,000,000 tons of 60% Fe. The dip is nearly vertical.

3) The deposit is a contact metamorphic deposit and evidently deposited under high temperature conditions as evidenced by the presence of garnets and other high temperature minerals. There has been little oxidation.

5) The major gangue mineral is quartz with considerable feldspar.

6) The ore intrudes rather flat lying beds of sandstone, limestone, and intrusive trap rock, a basic igneous intrusive. (See section of Rudnaya deposit, Enclosure A, Sketch #3). The wall rocks have been metamorphosed. They contain from 20 to 30% Fe and the ultimate mining limits will be determined by assay.

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8) The geology is quite simple. There has been no faulting or folding.

9) In addition to the two major deposits outlined by drilling, magnetometer surveys in the area have indicated some six or seven other anomalies but all appear much smaller than the two large ones.

10) No radioactivity measurements had been made up to 1933.

b. Rudnaya Gora Deposit (Map #1, 1b)

1) The Rudnaya deposit is located at about 57°18'N/103°55'E (Map #1) North of the town of Ilimsk on the Ilim River. It is the largest orebody in the Angara area.

2) a) A vein of magnetite five kms. long with a maximum thickness of 120 meters has been drilled to a depth of 500 meters. The size of the vein showed no diminution at depth.

b) The ore averages 55% Fe and is all magnetite.

c) A reserve of some 1,500,000 tons per foot of depth would be indicated but about half this would probably be closer to the fact.

d) There had been no development in 1933.

e) With the exception of the lack of an area of low grade ore, and the different size and shape, the description of the occurrence, mineralization etc. given for the Krasnoyarsk deposit can apply to the Rudnaya deposit. /Enclosure A, Sketch #3, a generalized section of the Rudnaya orebody could be applicable to either deposit./

c. Reason for Examination

1) Examinations of the Angara deposits were made as part of the determination of mineral possibilities along the line of a proposed railroad.

2) This railroad has since been completed from a point on the Trans-Siberian railroad about half way between Kansk and Nishni Ydinsk easterly almost paralleling the Trans-Siberian to the Okhotsk Sea.

d. Hydro Electric Possibilities

1) At the same time as the mineral examination, the question of building dams to utilize the potential power in the rapids of the Angara river was studied. The largest of these projects were the Padunskiy Porog and P'yanyy Porog, both rapids near the town of Bratskoye. Together these represent a potential power resource greater than Dneprstroi. They were not built as the district was sparsely settled and there were no industries. /Map # 1 See 1d1/.

2. Razdulnaya Antimony Deposit, 1934-1936

a. Location 58°26'N/94°35'E (Map #3, 2a). It is about 30 miles north of the Angara River near the town of Razdolinsk.

b. 1) A vein 900 meters long and 20 inches thick has been drilled to a depth of 250 meters. The ore at that depth showed no change in thickness or grade.

2) The indicated reserves are 4,800,000 tons of ore.

3) The grade of ore is 40 to 45% antimony.

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4) The production is unknown but only 100-150 men were working indicating a production of about 10 tons of antimony per day. The ore is shipped to Krasnoyarsk by boat. Production started in 1935.

5) Production is through an adit driven at an elevation of about 30 meters above the adjacent river with a ventilation shaft 65 meters deep near the end. (Enclosure B, See #6 and #7. The dip is almost vertical. A new shaft has been started near the river.

c. The ore occurs in a clean uniform vein. There is no indication of more than one period of deposition.

d. The only gangue mineral is quartz.

e. The only metallic mineral is antimonite (Stibnite) Sb_2S_3. Oxidation has extended only to a depth of 10 meters. In the oxide zone the antimony has been replaced by iron oxides.

f. The wall rocks are Algonkian schists. There are no volcanic rocks in the vicinity. The wall rock is rather hard but the drift requires timbering because of its fractured condition. The contact is sharp between ore and wall rock. The wall rock has seriatic and chloritic alteration products only.

g. There are gold deposits in the vicinity but little activity at present. One gold mine was worked underground before 1900. There are no other known antimony deposits in the area.

h. No attempt to find radioactive material had been made in 1936.

3. Yenisei Gold and Tin Area (Map #3, No. 3a)

a. The Sovetskiy Rudnik (gold mine) at the headwaters of the North branch of the Pit river about 59°50'N/94°20'E has been described in detail by Professor Cornostayer about 1935.

25X1X b. [redacted] in an effort to find the source of the tin which is found, in rather small quantities, in the alluvial stream deposits, [redacted] did find the pegmatites from which this tin was derived. Although there is a huge mass of pegmatite, the grade is so low that there is little chance of their ever being of economic interest. 25X1X

4. Kazakhstanskaya Steppe Gold Area (1938 - 1939 - 1940)

This is a large area between Latitudes 51-53½°N/70-74°E and Longitudes 69 to 74°E (Map 5).

a. Stepnyak Mines (Maps #4 and #5 - 4a; Enclosure C, Sketch 9)

1) Location - There are 12 known veins in the Stepnyak area near the town of Borovoye at 53°08'N/70°20'E.

2) Ore - Grade - Production - Reserves

a) The mines in the Stepnyak area are all mined for gold.

b) The grade of ore mined in 1938-1940 was from 25-30 grams per metric ton (roughly one ounce per ton). The grade of ore previously mined from the oxide zone was considerably higher.

c) The production before 1934 was about 3 tons gold per year. After 1935 to 1940 it was about 2½ tons per year.

d) The reserves in 1940 at an annual production of 3 tons of gold were sufficient to last 10 years.

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3) The veins are mezzothermal deposits associated with intrusions of granite stocks into sandstone. Both low and high temperature minerals are found in the gangue. The gold is mainly deposited along the sides of the veins with low values (two to five grams) per ton extending into the wall rocks in small one millimeter stringers. At one time it was planned to mine the wall rock with the richer vein matter but this plan was not adopted. The vein contains much breccia from the walls and the gold is deposited on these breccia particles. There are five large veins and 12 smaller ones known. The largest, the International, was about 1000 meters long, 25 to 30" thick.

5) As mentioned, the only mineral of economic importance is gold. Antimonite and schelite occur and there are small quantities of lead, zinc, and other minerals. Oxidation in the upper 130 meters has replaced most of the original vein material with clay and iron oxides.

8) The geology is quite complex. There is a major fault which cuts across the area from SW to NE. The Georgievsk Mine has been cut by a fault as shown in cross section /Sketch 10, Enclosure C/ but this fault appears to have been pre mineral as below it are three small veins which contain no values beyond 40 to 50 meters below the fault, while above the fault is the main vein, dipping at 25° degrees which outcrops. The vein at the Internatsional dips at 25° to the Northwest and is expected to continue at least as far as the sandstone contact of the granite and sandstone.

9) There are other mines in the vicinity but they are small.

10) No radioactive minerals occur so far as known but there had been no attempt to explore for them.

11) Mining

The active mines in 1940 were the Georgievsk with a 600 m. long vein. This mine has been almost mined out at 350 ms. depth /See #10, Enclosure G/.

The Internatsional - 1000 ms. long by 20 to 30 inches thick which shows no sign of diminition at depth.

The 1st May mine with a 600 meter long vein, now working. The Oktyabrsk Mine which is a large lowgrade working with a length of 1200 meters along the strike.

The small mine Northeast of the Oktyabrsk in the sandstone was cut off by a northwestward dipping fault.

There was a cyanide mill at the Internatsional mine and all ore was treated there. The mines were well equipped and supplied with electric power and compressed air. Hoisting was done through inclined shafts. The wall rock stands well. The mining method was overhand stoping. Only occasional stulls were necessary. The mines were wet near the surface but there was much less water at lower depth. Mining has been carried to a depth of 350 meters. Most of the ore now comes from the Internatsional. There are between 5000 and 6000 men working at the mine, mill and town.

b. Dzhalambet (Map 5, 4b)

25X1X [redacted] obtained [redacted] information from other geologists and engineers. 25X1X

1) The character of ore is quite similar to the Stepnyak ores. The deposits are younger and there are more fissures. In size the deposits are larger. They have not been developed to the same degree as the Stepnyak mines.

2) The production is about two tons per year but is increasing. [redacted] no idea how many are employed but do know it is several thousand. 25X1X

25X1A [redacted]

c. Stalinsk Deposit (Map 4, 4c)

The ore is similar to the other areas described. The ore is rich but not large and the end is probably in sight. The production is now (1939) about one ton per year.

Other deposits in the vicinity have ores and veins similar to Stepnyak but the veins are smaller although there are more of them.

d. Bes-Tyube Deposit (Map 5, 4d)

The veins in the Bes-Tyube are of the same general type as the Stepnyak veins but have been formed at temperatures up to epithermal.

This is a large area but in the exploratory stage. It is the youngest of the five Kazakhstanskaya districts.

The development has not extended deeper than 100 meters. The veins are all in the oxide zone and values run between 30 and 35 grams per metric ton.

4) The important gangue mineral is antimonite. Quartz and high temperature minerals are common.

5) In the oxide zone the vein minerals have been replaced by iron oxides.

6) The wall rocks are sedimentary and granite. Ore is found in the granite and the adjoining sandstone.

7) There are many veins but no data as to size or shape.

8) There are many faults.

e. Nurinsk Deposit. Exact location unknown, but Southeast of Bes-Tyube

25X1X [redacted] never visited this area.

It has only been worked a few years.

The ores are similar; quartz associated with granite intrusives into sediments. The veins are small but high grade 25-30 grams per metric ton. The production is only a few kilograms per year.

f. Maykain Area (Map 5, 4f)

1) The Maykain Area is not strictly within the Kazakhstanskaya Steppe Area but to the east. The deposits are quite dissimilar to the Kazakhstanskaya type. They are copper gold veins, 15-25 meter thick, 600-700 meters long and have been drilled to a depth of 250 meters. The drilling showed 20-25 grs/mt gold and almost half the drill core in the vein was copper ore.

A cyanide mill was built to recover the gold but had trouble. Considerable gold could be recovered by amalgamation.

2) There is dissagreement among Soviet geologists as to whether it is a vein or replacement deposit.

3) The gangue minerals in the oxide zone have been replaced by iron oxide. In the unoxidized ore they are chalcopyrite and pyrite with some quartz.

6) The wall rock is limestone, schist, and sandstone. The wall rock has definitely been altered by high temperature of vein formation.

7) The vein is almost vertical at the surface.

25X1A [redacted]

8) There are many faults and the rocks are folded.

9) In the general area of North Kazakhstanskaya all the deposits have been described in USSR technical publications. There are over 140 copper or gold deposits. Some are of the same type as Stepnyak and others similar to Maykain. All were worked at some time in the remote past but at the present time (1940) they are almost unexplored.

Enclosures (A) #3 Sketch showing a generalized section of Rudnaya Gora

(A) #4 Sketch plan of the Krasnoyarsk Mine

(B) #6 and #7 - Plan and Section Razdulnaya Mine

(C) #9 Plan of the Stepnyak Mines

(C) #10 Sketch showing a cross section of the Stepnyak Mine

Available at the CIA Map Library are four maps showing the location of mines and rapids described in this report.

1. UST-KUT Sheet USSR. Scale 1: 1,000,000 showing location of iron mines in Angara district. Also shows water power sites near Bratskoye. Map call number - 88162-R.

3. KRASNOYARSK Sheet USSR. Scale 1: 1,000,000 showing location of antimony deposit at Razdolinsk and gold mine at headwaters of Pit River. Map call number - 88161-R.

4. PETROPAVLOVSK Sheet USSR. Scale 1: 1,000,000 showing location of Borovoye gold district. Map call number - 88160-R.

5. Photostat of Kazakstanskaya area USSR showing location of gold districts and Maykain copper gold district. (It was not possible to pinpoint the location of Murinsk District.) Map call number - 88163-R.

To borrow maps call code 143, ext. 2596.

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1-12/731.1	529N
4-5/731.1	529N
1-12/731.1	3N
4-5/731.1	3N

ENCLOSURE (A)

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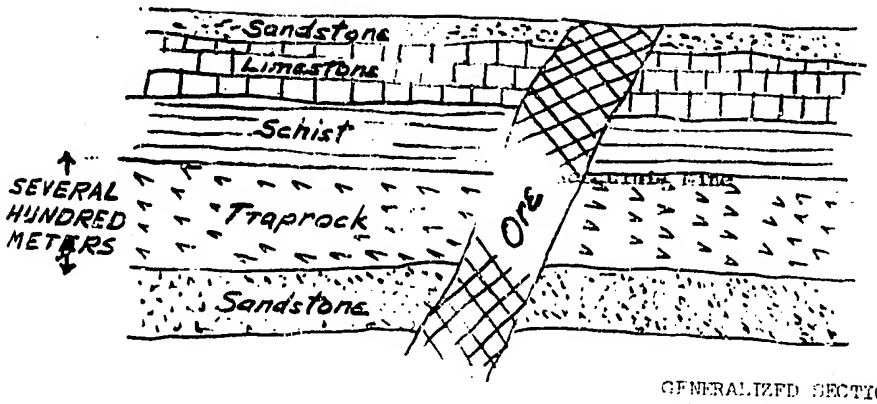
3.



GENERALIZED SECTION
RUDNAYA GORA
Not to scale

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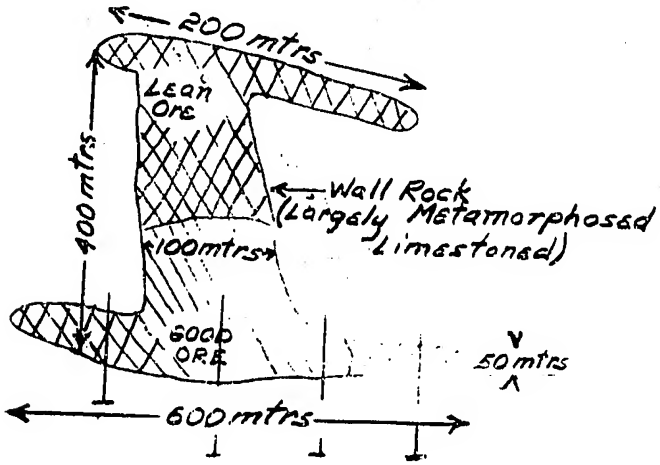

Sketch Plan
KRASNOYARSK MINE

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ENCLOSURE (B)

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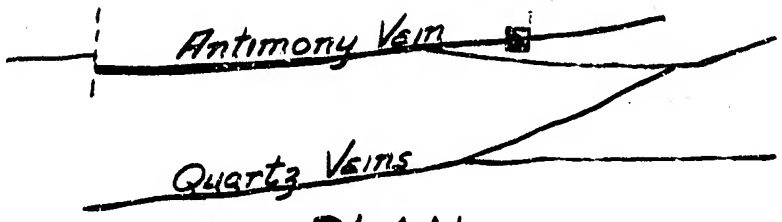
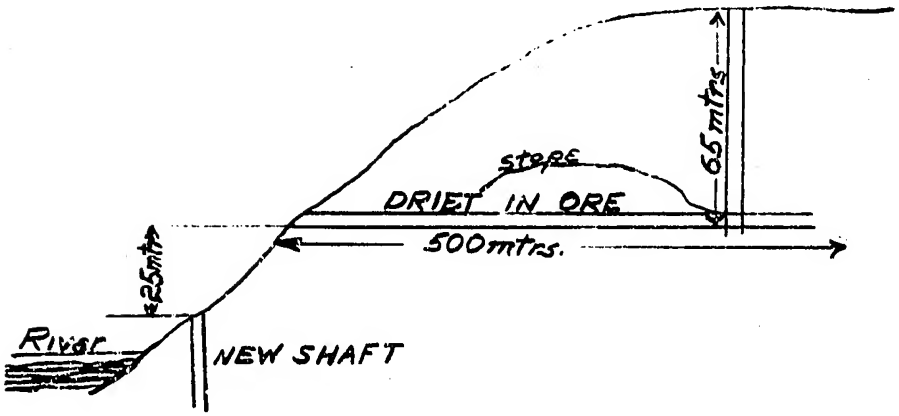
6.



PLAN

7.



LONGITUDINAL SECTION

BASIN MINE
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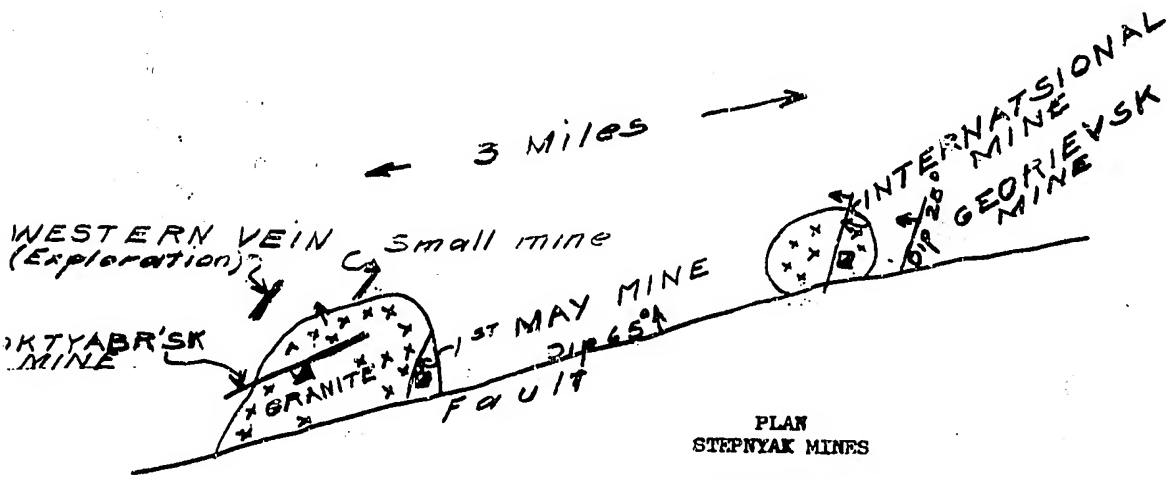

PLAN
STEPNYAK MINES

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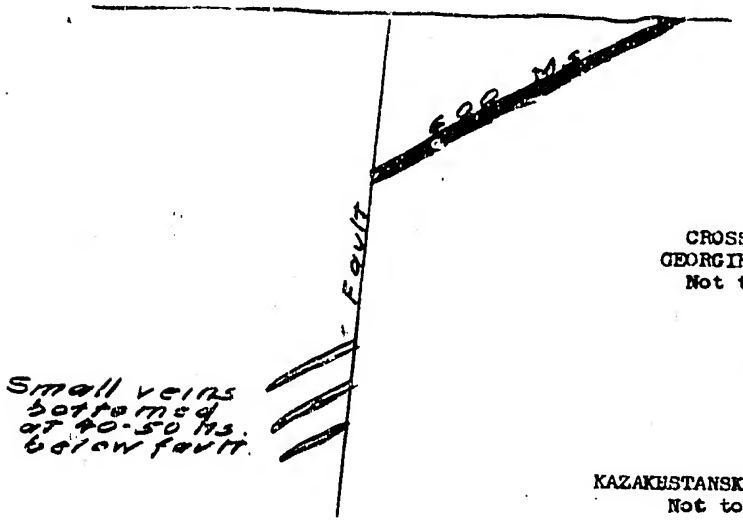
10



CROSS SECTION
GEORGIEVSK MINE
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KAZAKHSTANSKAYA GOLD AREA
Not to scale

ENCLOSURE C

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